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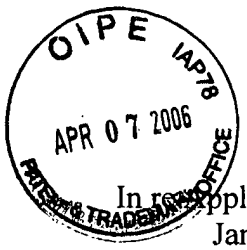

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: James Edward Simpson et al.	§	Group Art Unit:	2882
Serial No.: 10/813,365	§	Examiner:	Hoon K. Song
Filed: March 30, 2004	§		
For: X-RAY TUBE FOR A COMPUTED TOMOGRAPHY SYSTEM AND MEHOD	§	Atty. Docket:	140163-1/YOD GERD:0104

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37 C.F.R. 1.8

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April 4, 2006 (Date) Stephanie Shy (Signature)

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on January 5, 2006, and received by the Patent Office on January 9, 2006.

The Appellants hereby request a one-month extension from March 9, 2006 to April 9, 2006. Furthermore the Commissioner is authorized to charge the requisite one-month extension fee of $ 120.00, the brief filing fee of $500.00, and any additional fees which may be necessary to advance prosecution of the present application, to Deposit Account No. 07-0868, Order No. 140163-1/YOD (GERD:0104).

1. REAL PARTY IN INTEREST

The real party in interest is General Electric Company, the Assignee of the above-referenced application by virtue of the Assignment to General Electric Company by James Edward Simpson, Hector Manuel Rodriguez, Mark Earnest Vermilyea, Maria

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02 FC:1251 120.00 DA

Mercedes Otero and Brian Douglas Lounsberry recorded at reel 015172, frame 0601, and dated March 30, 2004. Accordingly, General Electric Company, as the parent company of the Assignee of the above-referenced application, will be directly affected by the Board's decision in the pending appeal.

2. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellants' legal representative in this Appeal.

3. STATUS OF CLAIMS

Claims 1, 2, 4-8, 10-17 and 19-21 are currently pending, are currently under final rejection and, thus, are the subject of this Appeal.

4. STATUS OF AMENDMENTS

The Appellants have not submitted any amendments subsequent to the Final Office Action mailed on December 5, 2005. Consequently, there are no outstanding amendments to be considered by the Board.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates generally to X-ray sources. *See* Application, paragraph 0001. More particularly, in certain embodiments, the invention relates to X-ray tubes having a rotating anode assembly. *See id.*

The Application contains five independent claims, namely, claims 1, 7, 14, 19 and 21, all of which are the subject of this Appeal. The subject matter of these claims is summarized below.

With regard to the aspect of the invention set forth in independent claim 1, discussions of the recited features of claim 1 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in

accordance with the present invention relates to an X-ray tube (e.g., 56) for generating X-rays (e.g., 26). The X-ray tube (e.g., 56) comprises an anode assembly (e.g., 70) and a cathode assembly (e.g., 92). *See, e.g., id.* at paragraph 0030; *see also* FIG 2. The anode assembly (e.g., 70) includes a target (e.g., 72) for emitting X-rays (e.g., 26) upon irradiation with an electron beam, a rotor shaft (e.g., 76) coupled to a motor rotor system (e.g., 80) and the target (e.g., 72) such that the rotor shaft (e.g., 76) is configured to rotate the target (e.g., 72), and a bearing system comprising at least two duplex bearing assemblies (e.g., 82 and 84) supporting the rotor shaft (e.g., 76). *See, e.g., id.* at paragraphs 0031-0033; *see also* FIG 3. The cathode assembly (e.g., 92) includes a cathode (e.g., 94) configured to emit the electron beam, and an insulator (e.g., 100) isolating the cathode (e.g., 94) from ground potential such that the insulator (e.g., 100) and the motor rotor system (e.g., 80) are located on the same side of the target (e.g., 72). *See, e.g., id.* at paragraphs 0034-0036; *see also* FIGS 4-5. *See also e.g., id.* at paragraph 0037; *see also* FIG 6.

With regard to the aspect of the invention set forth in independent claim 7, discussions of the recited features of claim 7 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a CT imaging system (e.g., 10). The imaging system (e.g., 10) includes a gantry (e.g., 14) adapted to rotate about a volume (e.g., 16) and an X-ray tube (e.g., 56) mounted on the gantry (e.g., 14). *See, e.g., id.* at paragraphs 0019-0020; *see also* FIG 1. The X-ray tube (e.g., 56) comprises an anode assembly (e.g., 70) and a cathode assembly (e.g., 92). *See, e.g., id.* at paragraph 0030; *see also* FIG 2. The anode assembly (e.g., 70) includes a target (e.g., 72) for emitting X-rays (e.g., 26) upon irradiation with an electron beam, a rotor shaft (e.g., 76) coupled to a motor rotor system (e.g., 80) and the target (e.g., 72) such that the rotor shaft (e.g., 76) is configured to rotate the target (e.g., 72), and a bearing system comprising at least two duplex bearing assemblies (e.g., 82 and 84) supporting the rotor shaft (e.g., 76). *See, e.g., id.* at paragraphs 0031-0033; *see also* FIG 3. The cathode assembly (e.g., 92) includes a cathode (e.g., 94) configured to emit the electron beam, and an insulator (e.g., 100)

isolating the cathode (e.g., 94) from ground potential such that the insulator (e.g., 100) and the motor rotor system (e.g., 80) are located on the same side of the target (e.g., 72). *See, e.g., id.* at paragraphs 0034-0036; *see also* FIGS 4-5. *See also e.g., id.* at paragraph 0037; *see also* FIG 6. The imaging system (e.g., 10) further includes an X-ray detecting unit (e.g., 28) configured to detect the X-ray emitted (e.g., 26) from the X-ray tube (e.g., 56) and transmitted through the volume (e.g., 16) and to generate a detector output signal in response to the detected X-rays. The imaging system (e.g., 10) may also include an X-ray controller (e.g., 36) to operate the X-ray tube (e.g., 56), a data acquisition system (e.g., 38) to receive the detector output signal and an image reconstructor (e.g., 40) coupled to the data acquisition system (e.g., 38) for generating an image signal in response to the detector output signal. A computer (e.g., 42) to control the operation of at least one of the X-ray controller (e.g., 36), the data acquisition system (e.g., 38) and image reconstructor (e.g., 40) may also be present. *See, e.g., id.* at paragraphs 0021-0026; *see also* FIG 1.

With regard to the aspect of the invention set forth in independent claim 14, discussions of the recited features of claim 14 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to an anode assembly (e.g., 70). The anode assembly (e.g., 70) includes a target (e.g., 72) for emitting X-rays (e.g., 26) upon irradiation with an electron beam, a rotor shaft (e.g., 76) coupled to a motor rotor system (e.g., 80) and the target (e.g., 72) such that the rotor shaft (e.g., 76) is configured to rotate the target (e.g., 72), and a bearing system comprising at least two duplex bearing assemblies (e.g., 82 and 84) supporting the rotor shaft (e.g., 76) such that the two duplex bearing assemblies (e.g., 82 and 84) straddle the target (e.g., 72). *See, e.g., id.* at paragraphs 0031-0033; *see also* FIG 3. *See also e.g., id.* at paragraph 0037; *see also* FIG 6.

With regard to the aspect of the invention set forth in independent claim 19, discussions of the recited features of claim 19 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in

accordance with the present invention relates to a method for CT imaging. The method includes rotating a gantry (e.g., 14) about a subject (e.g., 20) at greater than three rotations per second, emitting X-rays (e.g., 26) from an X-ray tube (e.g., 56) mounted on the gantry (e.g., 14) and generating one or more images of the subject (e.g., 20) based upon the attenuation of the emitted X-rays by the subject (e.g., 20). *See, e.g., id.* at paragraph 0033; *See also e.g., id.* at paragraph 0038. *See, e.g., id.* at paragraphs 0019-0026; *see also* FIG 1.

With regard to the aspect of the invention set forth in independent claim 21, discussions of the recited features of claim 21 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a CT system (e.g., 10). The CT system (e.g., 10) includes means for rotating a gantry (e.g., 14) about a subject (e.g., 20) at greater than three rotations per second, means for emitting X-rays (e.g., 26) from an X-ray tube (e.g., 56) mounted on the gantry (e.g., 14) and means for generating one or more images of the subject (e.g., 20) based upon the attenuation of the emitted X-rays by the subject (e.g., 20). *See, e.g., id.* at paragraph 0033; *See also e.g., id.* at paragraph 0038. *See, e.g., id.* at paragraphs 0019-0026; *see also* FIG 1.

A benefit of the invention, as recited in these claims, is the ability to enable fast CT scanning, such as with a gantry rotation speed of three rotations per second or better. *See* Application, paragraphs 0033 and 0038. Indeed, in one implementation five rotations per second (i.e., a rotation every 0.2 seconds) may be achieved. *Id.* As described in the specification, the X-ray tube may provide high-voltage stability of up to 200 kV in operation and axial coverage of up to 80 mm from the focal spot. *See id.* at paragraph 38. These benefits may be obtained with a compact configuration of the X-ray tube having reduced size and weight relative to other configurations. *Id.* Furthermore, the compact design and the use of dual duplex bearing assemblies which straddle the target allow to the X-ray tube to withstand the high structural stresses of up to 65g which may be associated with faster gantry rotational speeds. *Id.* The X-ray tubes, therefore, may be

used to enable faster gantry rotations of the CT imaging system 10, thereby increasing temporal resolution and improving diagnostic capability. *See, e.g., id.* at paragraph 0038.

This is a clear difference and distinction from the prior art, as discussed below.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

First Ground of Rejection for Review on Appeal:

Appellants respectfully urge the Board to review and reverse the Examiner's first ground of rejection in which the Examiner rejected claims 1, 2, 4-8, and 10-17 under 35 U.S.C. § 103(a) as being unpatentable over Carlson et al., U.S. Patent No. 5,978,447 (hereinafter 'Carlson '447) in view of Chidester, U.S. Patent No. 6,819,741 (hereinafter 'Chidester') and Carlson et al., U.S. Patent No. 4,577,340 (hereinafter 'Carlson '340').

Second Ground of Rejection for Review on Appeal:

The Examiner rejected claims 14-17 under 35 U.S.C. § 103(a) as being unpatentable over Carlson '340 in view of Carlson '447. Appellants respectfully urge the Board to review and reverse the Examiner's second ground of rejection.

Third Ground of Rejection for Review on Appeal:

The Examiner rejected claims 19-21 under 35 U.S.C. § 103(a) as being unpatentable over McCarthy, JR., U.S. Patent Application No. 2004/0109538 (hereinafter 'McCarthy'). Appellants respectfully urge the Board to review and reverse the Examiner's third ground of rejection.

7. ARGUMENT

As discussed in detail below, the Examiner has improperly rejected the pending claims. Further, the Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under Section 103. Accordingly, Appellants respectfully request full and favorable consideration by the Board, as Appellants strongly believe that claims 1, 2, 4-8, 10-17 and 19-21 are currently in condition for allowance.

A. **Ground of Rejection No. 1:**

The Examiner rejected claims 1, 2, 4-8, and 10-17 under 35 U.S.C. § 103(a) as being unpatentable over Carlson '447, Chidester and Carlson '340. Appellants respectfully traverse this rejection.

Claims 1, 7 and 14 and the Claims Depending Therefrom.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

Contrary to the cited caselaw, the Examiner fails to apply combinations of references that include *all* of the recited features of claims 1, 7, and 14. Therefore, Appellants respectfully assert that the present invention, as recited in independent claims 1, 7 and 14 is patentable over Carlson '447, Chidester and Carlson '340, alone or in combination.

In particular, with regard to claims 1 and 7, the examiner acknowledges that Carlson '447 fails to disclose, suggest or teach an insulator isolating the cathode from ground potential. The Examiner cites Chidester to obviate this deficiency in the teaching of Carlson '447. However, Chidester fails to disclose, suggest or teach the insulator and the motor rotor system being *located on the same side of the target* as recited in claims 1

and 7 of the present application. Instead, referring to Fig. 1 of the Chidester reference, the insulating cone (40) is depicted as being on the *opposite* side of the target (20) as the motor, depicted by stator (28). Therefore, contrary to the Examiner's assertion, the Chidester reference does not obviate this deficiency of the Carlson '447 reference with regard to claims 1 and 7.

Additionally, with regard to claim 14, the examiner acknowledges that Carlson '447 fails to disclose, suggest or teach two duplex bearing assemblies straddling the target. The Examiner relies upon the Carlson '340 reference to address this deficiency, however, the Carlson '340 reference also fails to disclose, suggest or teach at least two duplex bearing assemblies straddling the target as recited in claim 14 of the present application. Instead, the Carlson '340 reference appears to disclose two duplex bearing assemblies (78) that are on the same side of the target (43). *See* Carlson '340, Fig. 1. Therefore, contrary to the Examiner's assertion, the Carlson '340 reference does not obviate this deficiency of the Carlson '447 reference with regard to claim 14.

Not only are the cited combinations of references deficient for failing to disclose all recited elements of the relevant claims, in addition, the Examiner fails to supply sufficient reason as to why one skilled in the art would combine the cited references to construct the X-ray tube as recited in the present claims. In particular, with regard to the Chidester reference the Examiner states that: "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the x-ray tube of Carlson with the cathode insulator as taught by Chidester, since the insulator would reduce in voltage from the high voltage present at the anode and/or cathode to the much lower housing or ground potential (column 2 line 25-27)." The Appellants respectfully note, however, that the Carlson '447 reference specifically discloses an arrangement of a bearing assembly (68) that does not require additional electrical insulation with respect to the cathode assembly (55). *See* Carlson '447, col. 9, line 65 to col. 10, lines 4. One of ordinary skill in the art, therefore, would not read the disclosure of the Carlson '447 reference and be motivated to combine those teachings with the teachings of the Chidester reference relied

upon by the Examiner. Indeed, the present combination and motivation appears to exist solely for the sake of deprecating the recited subject matter of the present claims.

Likewise, with regard to the Carlson '447 and Carlson '340 references, the Examiner states that it would be obvious to one skilled in the art to adapt the bearings of Carlson '447 with duplex bearings as taught by Carlson '340, since duplex bearing would improve durability. However, the passage referenced by the Examiner merely notes the usage of "[a] pair of high durability bearings 78." Carlson '340, col. 4, lines 58-61. There is no indication within the Carlson '340 reference that the "durability" of the bearings 78 is attributable to the dual nature of the bearings, the composition of the bearings, or other factors. Indeed, the passage relied upon by the Examiner suggests that it is the use of *lubricants* with the bearings that assures long life. *See* Carlson '340, col. 4, lines 60-61 (stating "[bearings 78] are provided with conventional lubricants, assuring long life"). Therefore, *there is no basis* for combining the Carlson '447 and Carlson '340 references for the motivation of improving durability, as relied upon by the Examiner. Further, there is no suggestion in Carlson '340 that a duplex bearing would be needed or should be provided to withstand the high structural load at higher rotational speed of gantry (*See*, Column 4, lines 58-61, cited by the Examiner).

When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Appellant respectfully submits that neither Carlson reference nor the Chidester reference suggests the combination relied upon by the Examiner or a motivation for such a combination and that the Examiner is instead impermissibly picking and choosing from the cited art merely to deprecate the presently claimed subject

matter. Indeed the motivation for the present combination of references is clearly not the teachings found within these references themselves, but is instead the teachings of the Appellant as found in the recited claim language and supporting description of the present application. Accordingly, the Appellants believe that the combination is not obvious to one skilled in the art and the Examiner is impermissibly using hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

In view of the forgoing deficiencies in the teachings of the cited art, the Examiner has failed to establish a *prima facie* case of obviousness of claims 1, 7 and 14. These claims, and the claims depending therefrom are therefore believed to be clearly patentable over the cited combination. Thus, it is respectfully requested that the rejections of claims 1, 2, 4-8, and 10-17 under 35 U.S.C. §103(a) be withdrawn and the claims allowed to issue.

B. **Ground of Rejection No. 2:**

The Examiner rejected claims 14-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Carlson '340 in view of Carlson '447. Appellants respectfully traverse this rejection.

Claim 14 and the Claims Depending Therefrom.

Appellants respectfully assert that the present invention, as recited in independent claim 14 is patentable over Carlson '340 and Carlson '447, alone or in combination.

The examiner acknowledges that Carlson '340 fails to teach, disclose, or suggest the at least two duplex bearing assemblies straddling the target. The Examiner cites Carlson '447 to obviate these deficiencies in the teaching of Carlson '340. However, neither the Carlson '340 nor the Carlson '447 reference teach, disclose, or suggest at least two duplex bearing assemblies straddling the target as recited in claim 14 of the present

application. In fact, the Carlson '340 reference appears to disclose two duplex bearing assemblies (78) that are on the same side of the target (43). *See* Carlson '340, Fig. 1. Carlson '447 fails to disclose duplex bearing assembly at all.

Not only are the cited combinations of references deficient for failing to disclose all recited elements of the relevant claims, in addition, the Examiner fails to supply sufficient reason as to why one skilled in the art would combine the cited references to construct the X-ray tube as recited in the present claims. In particular, the Examiner states that it would be obvious to one skilled in the art to provide the X-ray tube configuration of Carlson '340 with the straddle bearings assembly of Carlson '447, since the X-ray tube configuration of Carlson '447 would more equally distribute the load of the rotating assembly among the bearings so that it would reduce the bearing failure. However, one skilled in the art, upon reading Carlson '340, may conclude that the use of 'high durability bearings 78' taught in Carlson '340 completely obviate the need of straddle bearings assembly for the reasons stated by the Examiner. *See* Carlson '340, col. 4, lines 58-61. Thus, there is no basis for combining the Carlson '340 and Carlson '447 references for the motivation of reducing the bearing failure, as relied upon by the Examiner.

C. **Ground of Rejection No. 3:**

The Examiner rejected claims 19-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McCarthy. Appellants respectfully traverse this rejection.

Claims 19 and 21 and the Claims Depending Therefrom.

Appellants respectfully assert that the present invention, as recited in independent claims 19 and 21 is patentable over McCarthy. McCarthy fails to teach, suggest or disclose rotational speed greater than three rotations per second. The rate of gantry rotation disclosed by McCarthy is in the range of 2-3 revolutions per second (*See*, Paragraph 27, lines 4-8). The examiner acknowledges that McCarthy fails to teach a

method of rotating the gantry at greater than three rotations per second or at approximately five rotations per second. However, the Examiner argued that it would have been obvious to one skilled in the art at the time of the invention to rotate the gantry of McCarthy at greater than three rotations per second or at approximately five rotations per second, since the faster rotational speed of the gantry would reduce scanning time.

Appellants respectfully assert that McCarthy would be motivated to rotate its gantry at greater than three rotations per second only if the gantry is capable of being rotated at the claimed speed, i.e., there can be no motivation to rotate the gantry faster than it is capable of being rotated and functioning. Appellants note that the McCarthy reference does not appear to disclose a gantry capable of rotating at greater than three rotations per second. Indeed, the detailed description of the McCarthy reference only discloses a gantry rotational velocity of 2-3 revolutions per second, as noted above. *See* McCarthy, paragraph 27, lines 4-8. As McCarthy has disclosed an exemplary *range* of revolutions per second, it is reasonable to assume that disclosed range is complete and constitutes the intended limit at which the McCarthy gantry is capable of rotating, else a broader range (such as 2-4 or 2-5 revolutions per second) would have been disclosed. That is, there is no reason for the McCarthy reference to disclose an *incomplete range* of intended or operational velocities. The fact that it would be convenient for the Examiner, in view of the claims of the present application, to rotate the gantry disclosed in the McCarthy reference at greater than the disclosed rotational velocity amounts to nothing more than impermissible hindsight analysis on the part of the Examiner, examining the cited reference in view of the presently recited subject matter, not in view of the teachings of the reference. Indeed, there is no indication that the gantry disclosed by the McCarthy reference is physically capable of rotating at velocities higher than those disclosed (see, for example, paragraphs 5-7 of the present application, discussing physical constraints on gantry rotational velocity), nor does the Examiner provide any indication as to why such high speed operation is believed possible of the McCarthy gantry.

Therefore, absent some indication that such rotational velocity is both possible and desirable in the context of the McCarthy reference, no *prima facie* case of obviousness is believed to exist with regard to claims 19 and 21. These claims, and the claims depending therefrom are therefore believed to be clearly patentable over the cited reference. Thus, It is respectfully requested that the rejection of claims 19-21 under 35 U.S.C. §103(a) be withdrawn.

Conclusion

Appellants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: April 4, 2006

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8. APPENDIX OF CLAIMS ON APPEAL

Listing of Claims:

1. (previously presented)An X-ray tube, comprising:

an anode assembly, comprising:

a target for emitting X-rays upon irradiation with an electron beam,

a rotor shaft coupled to a motor rotor system and the target, the rotor shaft configured to rotate the target, and

a bearing system comprising at least two duplex bearing assemblies supporting the rotor shaft; and

a cathode assembly, comprising:

a cathode configured to emit the electron beam, and

an insulator isolating the cathode from ground potential, wherein the insulator and the motor rotor system are located on the same side of the target.

2. (original) The X-ray tube of claim 1, wherein the insulator comprises a conical insulator.

3. (cancelled).

4. (original) The X-ray tube of claim 1, wherein the insulator is offset in a radial direction to the motor rotor system.

5. (original) The X-ray tube of claim 1, wherein the at least two duplex bearing assemblies distribute load substantially evenly.

6. (original) The X-ray tube of claim 1, wherein the at least two duplex bearing assemblies straddle the target.

7. (previously presented)A CT system, comprising:

a gantry adapted to rotate about a volume;

an X-ray tube mounted on the gantry, the X-ray tube, comprising:

an anode assembly, comprising:

a target for emitting X-rays upon irradiation with an electron beam,

a rotor shaft coupled to a motor rotor system and the target, the rotor shaft configured to rotate the target, and

a bearing system comprising at least two duplex bearing assemblies supporting the rotor shaft; and

a cathode assembly, comprising:

a cathode configured to emit the electron beam, and

an insulator isolating the cathode from ground potential, wherein the insulator and the motor rotor system are located on the same side of the target;

an X-ray detecting unit configured to detect the X-rays emitted from the X-ray tube and transmitted through the volume and to generate a detector output signal in response to the detected X-rays;

an X-ray controller configured to operate the X-ray tube;

a data acquisition system for receiving the detector output signal;

an image reconstructor coupled to the data acquisition system for generating an image signal in response to the detector output signal; and

a computer for controlling the operation of at least one of the X-ray controller, the data acquisition system and the image reconstructor.

8. (previously presented)The CT system of claim 7, wherein the insulator comprises a conical insulator.

9. (cancelled).

10. (original) The CT system of claim 7, wherein the insulator is offset in a radial direction to the motor rotor system.

11. (original) The CT system of claim 7, further comprising a collimator to direct the beam to the subject.

12. (original) The CT system of claim 7, wherein the at least two duplex bearing assemblies distribute load substantially evenly.

13. (original) The CT system of claim 7, wherein the at least two duplex bearing assemblies straddle the target.

14. (previously presented)An anode assembly, comprising:

a target for emitting X-rays upon irradiation with an electron beam;

a rotor shaft coupled to a motor rotor system and the target, the rotor shaft configured to rotate the target; and

a bearing system comprising at least two duplex bearing assemblies supporting the rotor shaft, wherein the at least two duplex bearing assemblies straddle the target.

15. (original) The anode assembly of claim 14, further comprising a fixed stem.

16. (original) The anode assembly of claim 15, wherein the rotor shaft is coupled with the fixed stem via the at least two duplex bearing assemblies.

17. (original) The anode assembly of claim 14, wherein the at least two duplex bearing assemblies allows load to be distributed substantially evenly.

18. (cancelled).

19. (previously presented)A method for CT imaging, the method comprising:

rotating a gantry about a subject at greater than three rotations per second;

emitting X-rays from an X-ray tube mounted on the gantry; and

generating one or more images of the subject based upon the attenuation of the emitted X-rays by the subject.

20. (original) The method of claim 19, wherein rotating the gantry comprises rotating the gantry at approximately five rotations per second.

21. (previously presented)A CT system, comprising:

means for rotating a gantry about a subject at greater than three rotations per second;

means for emitting X-rays from an X-ray tube mounted on the gantry; and

means for generating one or more images of the subject based upon the attenuation of the emitted X-rays by the subject.

9. APPENDIX OF EVIDENCE

None.

10. APPENDIX OF RELATED PROCEEDINGS

None.